

### REMARKS:

Claims pending in the application are 1-20.

In the Office Action, Claims 1-3, 5-6, 8-11, 15-18 and 20 have been rejected under 35 USC § 103(a) as allegedly being unpatentable over U.S. Patent No. 3,639,096 to Wright ("Wright") in view of U.S. Pat. No. 4,335,178 to Fearing ("Fearing"). In particular, the Examiner, while acknowledging that Wright fails to teach the addition of a hydroxyl-functional phosphorus ester containing at least two phosphorous atoms therein, has nevertheless concluded that it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Wright to use the phosphorus ester of Fearing in the composition of Wright to arrive at the present invention. However, as demonstrated in the Declaration filed with the previous response (herein "Declaration I") and again in the second Declaration filed herewith (herein "Declaration II"), if Wright were modified to include the phosphorus ester of Fearing, Wright would be rendered unsatisfactory for its intended purpose(s). Accordingly, there can be no suggestion or motivation to make the modification proposed by the Examiner since doing so would destroy the Wright invention.

Although the Examiner has acknowledged the statement that "the phosphorous composition of Fearing would destroy the wrinkle resistance properties of Wright" made by Dr. Stowell in Declaration I, the Examiner has stated that "there is no data to support this allegation." (see OA p.4). Although the Applicant does not agree with this statement and that the Declaration itself is enough to support the proposition for which it stands, Declaration II has been

provided. In Declaration II, Dr. Stowell provides and discusses three references that were available at the time of filing the present application and clearly indicate that the addition of compounds like Fearing's hydroxyl-functional phosphorus ester containing at least two phosphorous atoms would (undesirably) crosslink with hydroxyl groups present in Wright's cotton fabric rather than promote a different kind of cross linking reaction required to make the Wright fabric wrinkle resistant.

As stated in Declaration I, Wright is directed to a wrinkle resistant composition used to treat fabric. The mechanism for chemical modification of cotton by melamine formaldehyde and DMDHEU type resins to produce a wrinkle-resistant or durable press finish are well known in the art. (Stowell Declaration I, page 3, paragraph 8). Specifically, this is accomplished by cross-linking between the melamine formaldehyde and DMDHEU to the hydroxyl groups on the cotton fabric, thereby preventing wrinkles.

The durability of a hydroxyl-functional flame retardant is dependent on using that same resin molecule (melamine formaldehyde and DMDHEU) cross-linked to a cotton hydroxyl group. (Stowell Declaration I, page 2, paragraph 6). Therefore, if a hydroxyl functional flame retardant phosphorus ester containing at least two phosphorus atoms therein were introduced into the composition in Wright, it would compete with the hydroxyl groups on the fabric, which prevents cross-linking between the melamine formaldehyde and DMDHEU to the hydroxyl groups on the cotton fabric. (Stowell Declaration I, pages 3-4, paragraph 9). In that the cross-linking between the melamine formaldehyde and DMDHEU to the

hydroxyl groups on the cotton fabric is critical to preventing wrinkles in fabric, reacting a hydroxyl functional flame retardant phosphorus ester containing at least two phosphorus atoms therein with the composition of Wright would severely degrade, if not eliminate, any wrinkle resistant properties. (Stowell Declaration I, page 4, paragraph 9). Accordingly, adding a hydroxyl functional flame retardant phosphorus ester containing at least two phosphorus atoms therein would destroy the inventive objective of the Wright finishing system, which is directed to a wrinkle resistant composition used to treat fabrics. (Stowell Declaration I, pages 3-4, paragraph 9).

In an effort to support Dr. Stowell's statements made in Declaration I, Declaration II provides three literature citations that provide evidence to support the arguments presented in Declaration I.

As discussed in Declaration I and above, the mechanism for chemical modification of cotton by melamine formaldehyde and DMDHEU type resins to produce a wrinkle-resistant (a.k.a. durable press finish) is well known in the literature. This well known mechanism is described in Chapter 23 of *The American Cotton Handbook*, where it states that wrinkle-resistant finishes are given their properties by the resin's ability to crosslink hydroxyl groups located on different parts of the cotton fibers.

The standard method for evaluating the wrinkle-resistant properties of a fabric is by measuring the conditioned wrinkle recovery angle (WRA) according to AATCC Standard Method 66-1996 in which test specimens are folded and compressed under controlled conditions of time and force to create a folded

wrinkle. The test specimens are then suspended in a test instrument for a controlled recovery period, after which the recovery angle is recorded. An untreated fabric with low durable press qualities will have a WRA typically around 205°, while a fabric cross linked with a resin binder will typically have much higher WRA around 300° depending on the type of quantity of resin used.

Since the durability of a hydroxyl-functional flame retardant is dependant on using that same resin molecule discussed above to crosslink it to a cotton hydroxyl group, the introduction of hydroxyl-functional flame retardant would significantly degrade the wrinkle resistant properties and resulting WRA values for a treated fabric. As shown in the three citations listed above, there are clear examples showing that the addition of a hydroxyl functional flame retardant such as that described in patent application would significantly deteriorate the WRA / wrinkle resistant properties of the durable press resin systems.

This trend is shown quite well in Figure 1 on page 112 of Citation #1 (See Exhibit A) in which the resin without FR shows an increasing WRA as the level of resin is increased, while at the same time the system with FR shows very low wrinkle resistant properties at all resin levels. It is clear that there is very little cotton-resin-cotton cross-linking occurring in the system containing the FR. A conclusion stating this is present in the paragraph on the bottom of page 112 of Exhibit A.

In addition, Citation #2 (See Exhibit B) shows similar data in Figures 1 and 2 (pages 129 and 131 respectively) for resin systems based on both DMDHEU and M-F. The introduction of FR to the durable press resin systems shown

significantly reduces the wrinkle resistant properties of the systems by interfering with the normal cotton-resin-cotton cross-linking reaction. Similar data and conclusions are given in Citation #3 (See Exhibit C).

Accordingly, in view of the statements made in Declaration I and supported by the citations in Declaration II, one skilled in the art would not have added hydroxyl-functional phosphorus esters containing at least two phosphorus atoms therein to the Wright formulation since doing so would have rendered Wright's invention unsatisfactory for its intended purpose. Indeed, the addition of a hydroxyl-functional phosphorus ester containing at least two phosphorous atoms therein to composition in Wright would cause the hydroxyl-functional phosphorus ester containing at least two phosphorous atoms therein to cross-link with cotton hydroxyl groups, rather than promoting cross-linking between the melamine formaldehyde and DMDHEU to the hydroxyl groups on the cotton fabric hydroxyl groups located on different parts of the cotton fibers. (Stowell Declaration I, page 4, paragraph 10). In that wrinkle-resistant finishes are given their properties by promoting cross-linking between the melamine formaldehyde and DMDHEU to the hydroxyl groups on the cotton fabric hydroxyl groups located on different parts of the cotton fiber, adding a hydroxyl-functional phosphorus ester containing at least two phosphorous atoms therein would not produce a finish possessing the desired wrinkle-resistant properties. (Stowell Declaration I, page 4, paragraph 10).

As is well established by case law and codified in the M.P.E.P., "if proposed modification would render the prior art invention being modified

unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.” MPEP 2143.01; quoting *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). For this reason alone, it is respectfully requested that the rejection of Claims 1-3, 5-6, 8-11, 15-18 and 20 under 35 USC § 103(a) over Wright in view of Fearing be reconsidered and withdrawn.

Moreover, as stated in the previous response, one skilled in the art after reading Wright would have been led away from doing what the Applicants have done. That is, Wright, which involves a wrinkle resistant composition used to treat fabric so as to make it wrinkle resistant, actually teaches away from adding a hydroxyl functional flame retardant phosphorus ester containing at least two phosphorus atoms therein, as doing so would cause competitive reactions between the two different additions. As stated in Declaration I and supported by Declaration II, adding hydroxyl-functional phosphorus esters containing at least two phosphorus atoms therein to the Wright formulation would cause a competitive reaction for the hydroxyl groups of the cotton fabric and reduce cross linking and would not result in a composition that will impart wrinkle resistant properties in fabric. In view of the foregoing, it is respectfully submitted that Wright, which involves a wrinkle resistant composition used to treat fabric, teaches away from the addition of any component that would interfere with the ability to prevent wrinkles in fabric, including the hydroxyl-functional phosphorus esters containing at least two phosphorus atoms therein of the present invention. Accordingly, for the reasons stated above, it is respectfully

requested that the rejection of Claims 1-3, 5-6, 8-11, 15-18 and 20 under 35 USC § 103(a) over Wright in view of Fearing be reconsidered and withdrawn.

Similarly, in the Office Action Claims 4 and 19 have been rejected under 35 USC § 103(a) as allegedly being unpatentable over Wright in view of Fearing ("Fearing") and U.S. Patent No. 3,746,572 to Weil et al. As stated above and supported by Declaration I and II, adding a hydroxyl functional flame retardant phosphorus ester containing at least two phosphorus atoms therein to the composition of Wright would destroy the inventive purpose of Wright. As such, there is no suggestion or motivation to add a hydroxyl functional flame retardant phosphorus ester containing at least two phosphorus atoms therein to the composition of Wright. In view of the foregoing and in view of the fact that Fearing and Weil et al., either alone or in combination, fail to correct the factual defects of Wright, the combination of Wright, Fearing and Weil et al. fails to teach or suggest a composition as recited in Claims 4 and 19. Accordingly, it is respectfully requested that the rejection of Claims 4 and 19 under 35 USC § 103(a) over Wright in view of Fearing and Weil et al. be reconsidered and withdrawn.

In the Office Action Claims 7, 12 and 14 have been rejected under 35 USC § 103(a) as allegedly being unpatentable over Wright in view of Fearing, Wu et al. "Comparison of Different Organophosphorus Flame Retardant Agents for Cotton," Polymer Degradation and Stability 92 (2007) 363-369 ("Wu"), and EP 0 138 204 A1 to Fesman et al. ("Fesman"). As stated above, adding a hydroxyl functional flame retardant phosphorus ester containing at least two

phosphorus atoms therein to the composition of Wright would destroy the inventive purpose of Wright. As such, there is no suggestion or motivation to add a hydroxyl functional flame retardant phosphorus ester containing at least two phosphorus atoms therein to the composition of Wright. In view of the foregoing and in view of the fact that Fearing, Wu and Fesman, either alone or in combination, fail to correct the factual defects of Wright, the combination of Wright, Fearing, Wu, and Fesman fails to teach or suggest a composition as recited in Claims 7, 12 and 14. Accordingly, it is respectfully requested that the rejection of Claims 7, 12 and 14 under 35 USC § 103(a) over Wright in view of Fearing, Wu and Fesman be reconsidered and withdrawn.

In the Office Action, Claim 13 has been rejected under 35 USC § 103(a) as allegedly being unpatentable over Wright in view of Fearing, Weil et al., Wu, and Fesman. As stated above, adding a hydroxyl functional flame retardant phosphorus ester containing at least two phosphorus atoms therein to the composition of Wright would destroy the inventive purpose of Wright. As such, there is no suggestion or motivation to add a hydroxyl functional flame retardant phosphorus ester containing at least two phosphorus atoms therein to the composition of Wright. In view of the foregoing and in view of the fact that Fearing, Weil et al., Wu and Fesman, either alone or in combination, fail to correct the factual defects of Wright, the combination of Wright, Fearing, Weil et al., Wu, and Fesman fails to teach or suggest a composition as recited in Claim 13. Accordingly, it is respectfully requested that the rejection of Claim 13 under



35 USC § 103(a) over Wright in view of Fearing, Weil et al., Wu and Fesman be reconsidered and withdrawn.

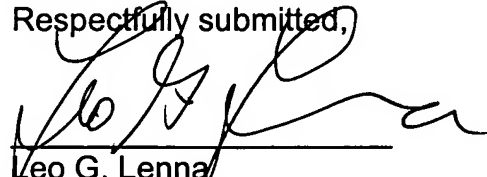
In the “*Response to Argument*” section of the Office Action, the Examiner stated that “the scope of the present invention is silent with respect to the desirability of excluding any ingredients that would potentially interfere with the cross linking activity of the claimed ingredients with a cellulosic material. . .” The Applicants respectfully disagree with the Examiner’s reasoning. The claims of the present invention are not the focus in determining whether the invention of a first reference is destroyed when combined with a second reference. Instead, the focus of such a principal is whether the invention of the first reference becomes inoperable when teachings from a second reference are used to change the first reference in such a way so as to arrive at the present invention. Therefore, the Applicants do not believe that the present claims need to include a limitation that “*nothing can be added to affect cross linking*” as suggested by the Examiner in order to make Applicants’ argument that the combination of Wright and Fearing is prohibited since the combination makes Wright inoperable for its intended purpose convincing.

Similarly, the amount of all of the components or the specific level of wrinkle resistivity is *NOT* necessary to make the argument that the combination of Wright and Fearing is prohibited since Fearing destroys the purpose of Wright for which it was intended.

In view of the forgoing remarks supported by Declaration II, it is respectfully submitted that all claims pending herein are in condition for

allowance. The Examiner is respectfully invited to contact the undersigned attorney should there be any questions. Early and favorable consideration of the case is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Leo G. Lenna', written over a horizontal line.

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